

RAINFALL & RIVER FLOW MONTHLY REPORT OTAGO REGIONAL COUNCIL

April 2005

In Brief

Rainfall totals were below normal in several districts this month, including North Otago, the Taieri and Dunedin areas, and the Queenstown-Lakes. In South Otago, rainfall totals were all close to average. The Manuherikia – Maniototo was drier than usual, while further down the Clutha, the Ettrick area was wetter than normal.

There were no significant flood events during the month, although the Pomahaka, and Taieri Rivers experienced a smaller event early in the month. Average river flows for the month were generally close to normal for April.

Contents

Rainfall & river flows around the region are summarised in text and graphs, covering the districts of:

- North Otago
- Lower Taieri, Strath Taieri & Dunedin
- South Otago
- Central Otago
- Queenstown – Lakes

Tables at the end of the report give more detailed information from sites in each of these areas.

An additional table also summarises the level and outflow of Lakes Wakatipu and Wanaka.

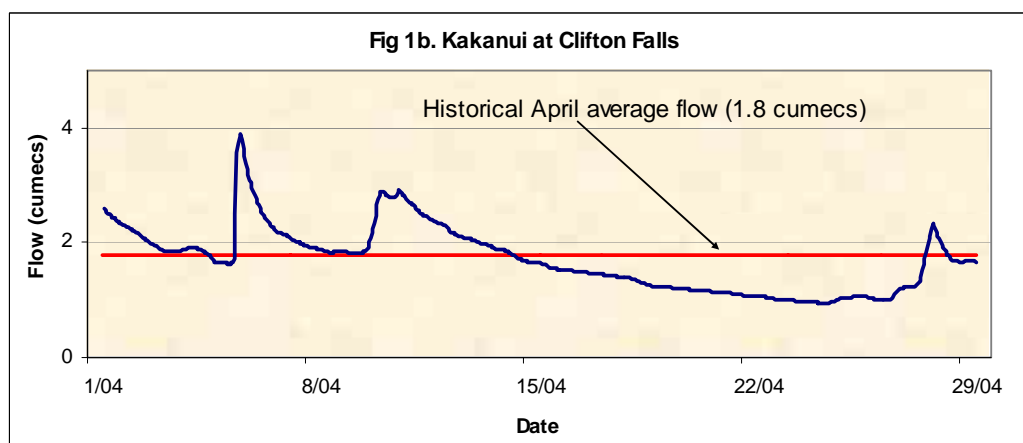
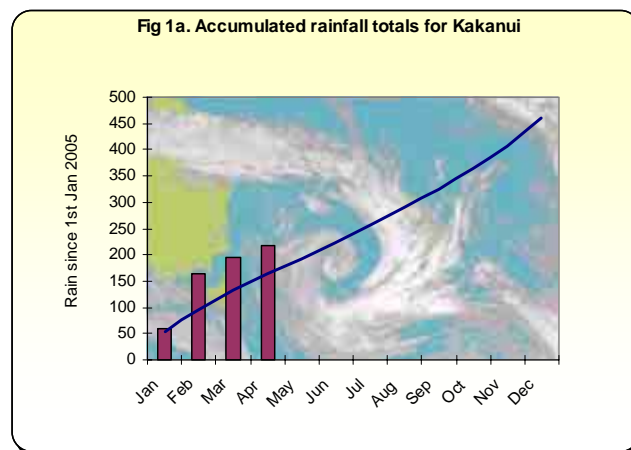
Rainfall & river flows around the region

North Otago

Rainfall totals in North Otago were mostly below normal, with the exception of Oamaru, which was **20% above** average with **45mm** collected over the month. Further inland, precipitation was considerably less, and ranged from **20mm** in the Kakanui catchment at Clifton Falls, to **23mm** in the Shag at Stoneburn. Rainfall in the headwaters of the Kauru at The Dasher was **31mm**, which is only half the normal total for April.

Figure 1a shows that despite a relatively dry month at Kakanui at Clifton Falls, the accumulated total for the year is still above normal, due to a very wet period in February.

River flow in the Kakanui at Clifton Falls was **above average** for the first two weeks of April (Figure 1b), then dropped to as low as **0.9 cumecs** during the latter part of the month. In the Shag catchment, average flow for the month at the Grange recording site was **0.5 cumecs**, slightly below the long term average for April of 0.6 cumecs.



Lower Taieri, Strath Taieri & Dunedin

Rainfall totals for April were **below normal** in the Dunedin area. Pine Hill recorded **41.5mm**, **40% below** the long term average of 70mm (Figure 2a). Musselburgh rainfall was half the long term average, with **30mm** collected over the month.

Rainfall on the Taieri Plains was **below normal**, and ranged from **27mm** at Dunedin Airport, to **44mm** at nearby Riccarton Road. The accumulated rainfall total for the Taieri at Riccarton Road is still above the long term average line (Figure 2b). In the Strath Taieri, Middlemarch rainfall was also **below average** with **23mm** (Figure 2c).

Average monthly river flows in the Leith and Silverstream were greater than normal, although no exceptionally high flows were recorded. Flow in the Taieri River was also generally above normal (Figure 3). A small flood peak of 73 cumecs was measured in the Taieri at Outram early in the month, caused by catchment-wide rain on the 4th of April.

Fig 2a. Accumulated rainfall totals for North Dunedin

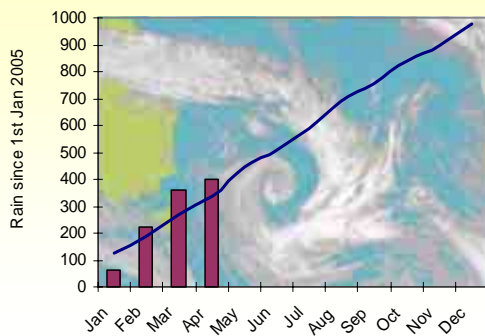


Fig 2b. Accumulated rainfall totals for Taieri Plains

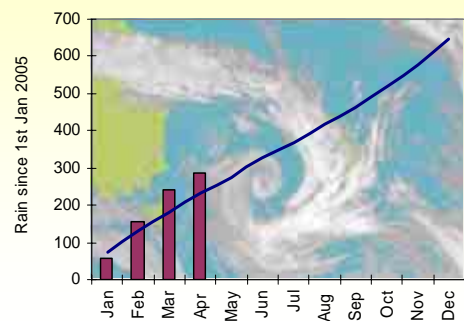
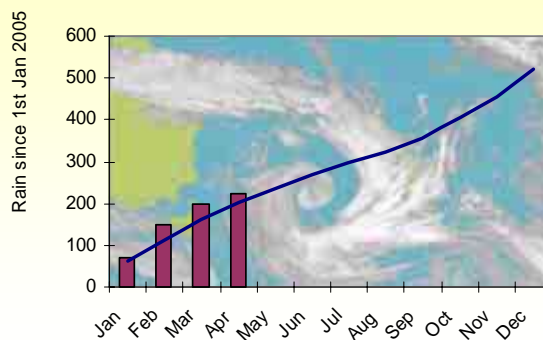
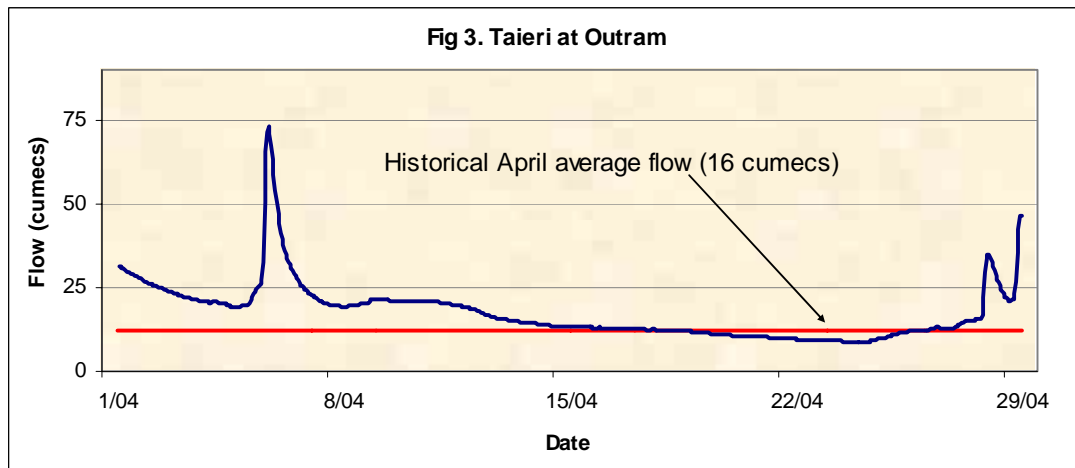


Fig 2c. Accumulated rainfall totals for Middlemarch





South Otago

South Otago rainfall totals were all close to the long-term average, with the exception of Balclutha (**24% below** normal), and Waipahi at Cairn (**19% above** normal). The Cairn site received the most rain (**109.5mm**), while Balclutha was the driest (**38mm**). Figure 4 shows accumulated rainfall totals for 2005 at Balclutha are slightly below the long term average line.

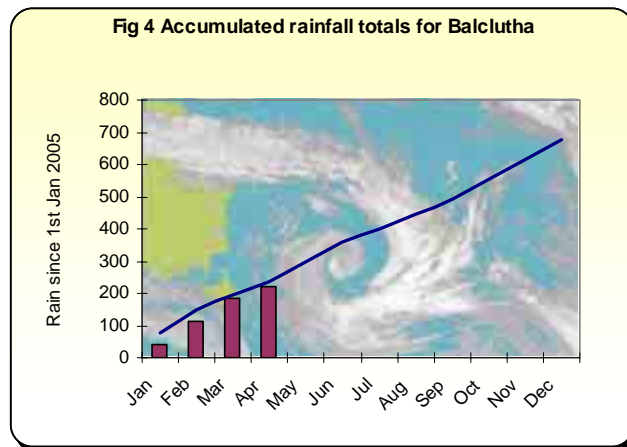
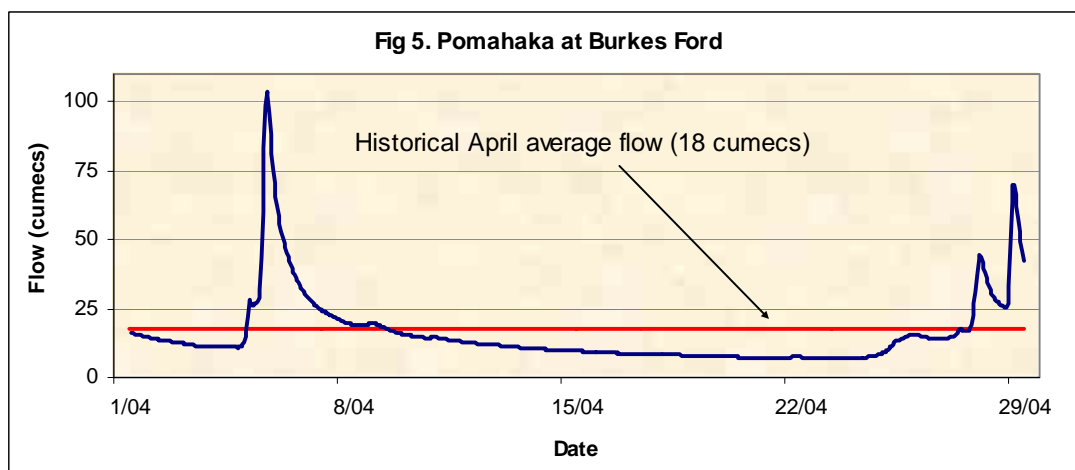
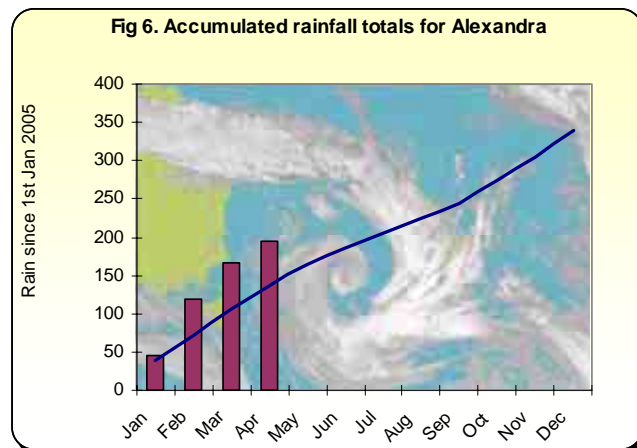


Figure 5 shows that for the Pomahaka at Burkes Ford, a reasonably significant event (105 cumecs) at the beginning of the month was followed by a fairly dry period, with below average flows. Two smaller events occurred at the end of the month. Average flow for April was approximately normal at **17 cumecs**.

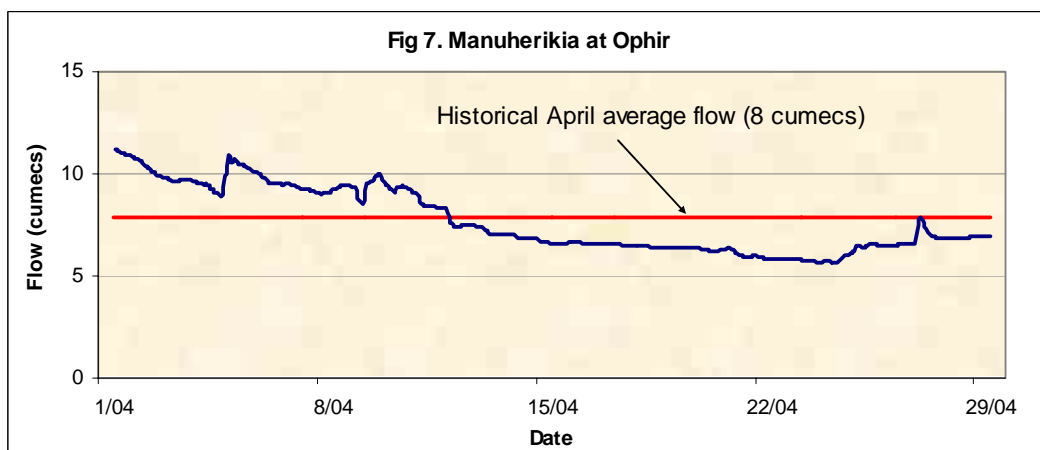


Central Otago

Figure 6 shows that rainfall at Alexandra this month was approximately normal with **27mm**, although the total rainfall this year up to the end of the month is still well ahead of the long-term average. There was a wide range of rainfall totals in Central Otago this month. The wettest site was Ettrick, which received **62mm** (**40% higher** than normal). The driest area was the Manuherikia, where Lauder recorded only **17mm**: less than half the normal monthly rainfall.

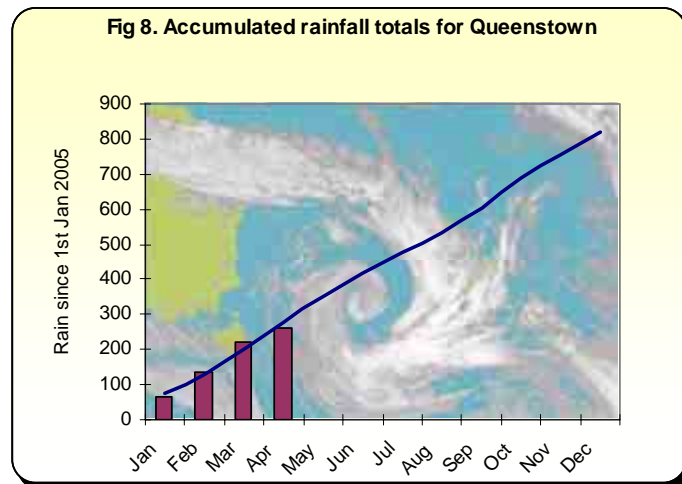


The reasonably dry conditions in the Manuherikia resulted in steadily declining river flow, with the Manuherikia River at Ophir recording a monthly average very close to normal (Figure 7). There were no significant flow events during the month, with a peak of just **11 cumecs** at this site.



Queenstown-Lakes

Rainfall totals in the Queenstown-Lakes district were all well below normal this month. Rainfall in Queenstown was **39mm**, approximately half the long term April average of **74mm**. Figure 8 shows that the 2005 accumulated rainfall total in Queenstown is now slightly below the long-term average.



River flows were also below normal for April, and ranged from **20 to 40% below** average.

Lake levels at the end of April were also slightly **below normal** for Wakatipu and Wanaka. Average levels for the month were also slightly **below normal**.

Further information

See the Otago Regional Council website for regular rainfall and river flow updates:
<http://www.orc.govt.nz/waterinfo>

For more information phone John Threlfall, Director Environmental Information and Science on 03 474 0827.

More detailed rainfall and river flow data is available from Chris Arbuckle, Manager Resource Science, on 03 474 0827 or e-mail: chris.arbuckle@orc.govt.nz

Mailing list

This report is available by email

To update your contact details on our mailing lists, please contact: neil.allison@orc.govt.nz; tel: 03 474 0827.

Acknowledgement

The information produced in this report was derived from rainfall, flow, lake level and lake outflow data collected from stations throughout the region operated by private individuals and corporate bodies, the National Institute of Water & Atmospheric Research Limited, Dunedin City Council and Contact Energy who are gratefully acknowledged.

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RAINFALL TABLE (April 2005)

Station	Area	Total Rainfall for this Month (mm)			Total Rainfall this Year Up to the End of this Month (mm)		
		Recorded	Historic	% Change	Recorded	Historic	% Change
Oamaru AWS	North Otago	45.200	38.0	18.95	176.40	166.00	6.27
Grandview	North Otago	45.000	42.0	7.14	249.20	186.00	33.98
Glenrowan	North Otago	39.300	52.0	-24.42	253.40	234.00	8.29
Waikoura	North Otago	39.500	45.0	-12.22	203.00	188.00	7.98
Clifton Falls	North Otago	20.500	34.0	-39.71	216.00	166.00	30.12
The Dasher	North Otago	31.500	63.0	-50.00	278.50	291.00	-4.30
Stoneburn telemetry	North Otago	23.000	40.0	-42.50	241.50	218.00	10.78
Leith at Sullivan's Dam	L/S Taieri, Dun	63.500	93.0	-31.72	472.50	398.00	18.72
Leith at Pine Hill	L/S Taieri, Dun	41.500	70.0	-40.71	399.50	343.00	16.47
Musselburgh	L/S Taieri, Dun	30.000	66.0	-54.55	284.40	269.00	5.72
Taieri Depot	L/S Taieri, Dun	44.500	52.0	-14.42	285.50	236.00	20.97
Dunedin Airport	L/S Taieri, Dun	27.400	48.0	-42.92	217.50	239.00	-9.00
Mt Stoker	L/S Taieri, Dun	26.000	34.0	-23.53	207.50	179.00	15.92
Glengarry	L/S Taieri, Dun	29.000	43.0	-32.56	250.50	209.00	19.86
MiddleApril-Garthmyl	L/S Taieri, Dun	23.400	39.0	-40.00	228.90	201.00	13.88
Balclutha	Southwest Otago	38.000	50.0	-24.00	223.00	238.00	-6.30
Warepa	Southwest Otago	64.100	63.0	1.75	288.00	276.00	4.35
Clarks Flat	Southwest Otago	56.000	53.0	5.66	241.00	275.00	-12.36
Cairn	Southwest Otago	109.500	92.0	19.02	312.00	392.00	-20.41
Waikoikoi at Rosebank	Southwest Otago	71.700	74.0	-3.11	292.00	319.00	-8.46
Moa Flat	Southwest Otago	58.500	62.0	-5.65	391.50	286.00	36.89
Ranfurly	Central Otago	22.600	40.0	-43.50	165.00	177.00	-6.78
Pat-Paerau	Central Otago	41.000	29.0	41.38	213.50	149.00	43.29
Tima	Central Otago	53.000	48.0	10.42	212.50	243.00	-12.55
Ettrick No2	Central Otago	62.300	45.0	38.44	243.70	226.00	7.83
Blackstone Hill	Central Otago	25.500	53.0	-51.89	194.10	241.00	-19.46
Hills Creek	Central Otago	29.000	42.0	-30.95	178.00	191.00	-6.81
Lauder EWS	Central Otago	16.600	38.0	-56.32	183.80	188.00	-2.23
Merino Ridges	Central Otago	26.000	37.0	-29.73		170.00	
Alexandra	Central Otago	26.600	30.0	-11.33	193.60	137.00	41.31
Clyde EWS	Central Otago	26.600	42.0	-36.67	176.20	154.00	14.42
Hunter Valley 2	Lakes district	33.000	84.0	-60.71		343.00	
Makarora telemetry	Lakes district	65.000	168.0	-61.31	465.00	649.00	-28.35
West Wanaka	Lakes district	24.000	79.0	-69.62	252.50	301.00	-16.11
Wanaka Aero AWS	Lakes district	17.400	59.0	-70.51	153.20	219.00	-30.05
Peat's Hut	Lakes district	39.500	54.0	-26.85	253.50	215.00	17.91
Glenorchy telemetry, Hillocks	Lakes district	72.193	88.0	-17.96	425.16	445.00	-4.46
Queenstown	Lakes district	38.700	74.0	-47.70	246.70	278.00	-11.26
Queenstown AWS	Lakes district	36.600	58.0	-36.90	231.80	231.00	0.35

RIVER FLOW TABLE (April 2005)

Station	Area	Minimum flow recorded (m ³ /s)	Maximum flow recorded (m ³ /s)	Mean flow for the month (m ³ /s)	Historic mean for the month (m ³ /s)	% Change of Historic Mean
Kakanui River at Mill Dam	North Otago	1.427	5.393	2.562	2.986	-14.21
Kakanui River at Clifton Falls	North Otago	0.955	3.933	1.694	1.797	-5.74
Shag River at The Grange	North Otago	0.334	0.972	0.507	0.610	-16.85
Leith at University Foot Br	L/S Taieri, Dun	0.142	1.892	0.387	0.592	-34.68
Silverstream at Taieri Depot	L/S Taieri, Dun	0.062	1.918	0.275	0.455	-39.63
Taieri River at Outram	L/S Taieri, Dun	8.826	73.091	17.931	15.947	12.44
Taieri River at Sutton	L/S Taieri, Dun	5.866	18.285	10.206	9.478	7.68
Taieri River at Tiroiti	L/S Taieri, Dun	3.583	10.696	6.880	7.502	-8.29
Taieri River at Waipiata	Central Otago	2.559	10.903	5.384	4.960	8.55
Nenthorn Stream at Mt Stoker Rd	L/S Taieri, Dun	0.438	2.287	0.842	0.381	120.79
Deep Stream at SH 87	L/S Taieri, Dun	0.729	58.024	3.441	1.841	86.88
Waipori River at Berwick	Southwest Otago	0.792	33.749	16.687	8.555	95.05
Clutha River at Balclutha	Southwest Otago	198.080	627.236	381.313	506.151	-24.66
Waitahuna River at Tweeds Br	Southwest Otago	0.976	9.887	1.510	1.432	5.43
Pomahaka River at Burkes Ford	Southwest Otago	7.042	104.496	16.819	17.867	-5.87
Pomahaka River at Glenken	Southwest Otago	2.874	119.081	9.847	8.624	14.19
Waipahi River at Waipahi	Southwest Otago	1.317	11.144	2.946	3.017	-2.34
Manuherikia River at Ophir	Central Otago	5.628	11.303	7.645	7.892	-3.13
Clutha at Clyde	Central Otago	108.813	645.709	342.317	482.092	-28.99
Clutha River at Cardrona Confluence	Lakes District	124.322	303.886	186.236	255.705	-27.17
Kawarau River at Chards Rd	Lakes District	116.976	253.008	161.643	205.784	-21.45
Shotover River at Bowens Peak	Lakes District	25.249	85.325	29.183	29.984	-2.67
Shotover River at Peat's Hut	Lakes District	9.145	99.464	13.003	19.334	-32.75
Dart River at The Hillocks	Lakes District	28.801	511.827	48.876	85.785	-43.03

LAKE LEVEL AND OUTFLOW TABLE

Lake	Lake level for the month (m above mean sea level)					Historic mean lake level (m above mean sea level)
	First Day	Last Day	Min.	Max.	Mean	
Lake Wakatipu	309.962	309.590	309.517	309.983	309.739	309.914
Lake Wanaka	277.176	276.638	276.560	277.195	276.881	277.284

Lake	Lake outflow for the month (m ³ /s)					Historic mean outflow (m ³ /s)
	First Day	Last Day	Min.	Max.	Mean	
Lake Wakatipu	179.0	95.1	81.5	184.9	127.0	172.12
Lake Wanaka	182.7	103.9	94.0	185.8	138.3	198.33

Notes:

L/S Taieri, Dun = Lower Taieri, Strath Taieri and Dunedin.

* = Controlled Outflows.